

CLAIMS

What is claimed is:

1. A system that produces a reticle, comprising:
a fabrication device; and
a regulation component that receives reticle inspection data from the fabrication device and utilizes the data to facilitate adjusting control parameters of the fabrication device to improve reticle fabrication by mitigating defects associated with delay times.
2. The system of claim 1, further comprising a collection component that receives data sent from the fabrication device.
3. The system of claim 1, the regulation component employing at least one of an advanced process control system, a statistical process control system, a feedback system, a feed forward system, a proportional-integral-derivative control system and a fuzzy logic control system.
4. The system of claim 1, the fabricating device further fabricating at least one of a semiconductor and a substrate.
5. The system of claim 1, the collection component employing an algorithm to process received data.
6. The system of claim 4, the algorithm being a data-mining algorithm comprising at least one of: a neural network, evolutionary programming, memory based reasoning, a decision tree, a genetic algorithm a nonlinear regression and a Bayseian belief networks.
7. The system of claim 1, the fabrication device employed to perform at least one of the steps of expose, post-expose bake, develop and inspection.

8. The system of claim 1, the reticle comprising at least one of a resist, an opaque metal film and a glass substrate.
9. The system of claim 7, the resist being at least one of a PMMA, an EBR-9, a PBS, a ZEP 520-12, an AZ5206, an APEX-E, an UV-5, a SAL-601, an UVN2, an UVN30, a NEB-31, a COP and a SAL-606 electron beam resist.
10. A system that fabricates a reticle, comprising:
 - an expose component that writes critical dimensions onto the surface of a resist employed in the fabrication of the reticle;
 - a develop component to process the resist;
 - an inspection component to insure the critical dimensions fabricated on the reticle are not outside of desired tolerances;
 - a data collection component that receives data from the expose component, the post-expose bake component, the develop component and the inspection component;
 - a data processing component that determines what changes are needed to the system to improve reticle fabrication to fall within desired tolerances; and
 - a feedback/feed forward control component to facilitate changes needed as determined by the data processing component.
11. The system of claim 10 further comprising a post-expose bake component.
12. The system of claim 10, the inspection component at least one of a scatterometry system, an ellipsometry system, a laser displacement system, an inductive system and a capacitive system.
13. The system of claim 10, the feedback/feed forward component is an advanced process control system.
14. The system of claim 13, the advanced process control system further comprising at least one of run-to-run control and fault detection and classification control.

15. The system of claim 10, the data processing component is a data-mining algorithm.
16. A method for monitoring and controlling a reticle fabrication process comprising:
 - exposing the reticle;
 - baking the reticle in a post-expose bake process;
 - developing the reticle;
 - inspecting the reticle;
 - determining if one or more data points are outside of acceptable tolerances;
 - processing the data with an algorithm; and
 - feeding forward or backward the control data to adjust one or more fabrication components or one or more operating parameters associated with the fabrication.
17. The method of claim 16 exposing the reticle is performed by at least one of electron beam, X-ray, ion or a light source.
18. The method of claim 16, the algorithm is a data-mining algorithm.
19. The method of claim 16, inspecting the reticle is accomplished utilizing at least one of scatterometry, ellipsometry, laser displacement, inductive or capacitive technologies.

20. A method for monitoring and controlling a reticle fabrication process, the method comprising:
- means for exposing the reticle;
 - means for baking the reticle after exposure is complete;
 - means for developing the reticle;
 - means for inspecting the reticle;
 - means for collecting the data provided during the fabrication and inspection of the reticle; and
 - means for providing feedback and/or feed forward control to the fabrication process.